

The NASA Organizer Semantic Hypermedia System

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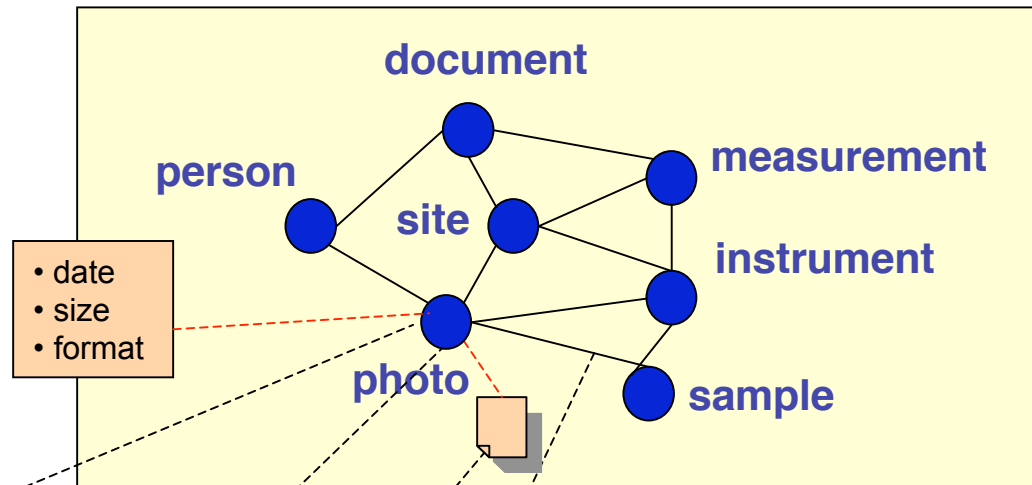
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What is NASA Organizer?

- **A collaborative knowledge management and information-structuring tool for distributed science or engineering project teams**
- **A project information repository / digital library:** stores heterogeneous project information products -- images, datasets, documents, and various types of scientific/engineering records
- **A hybrid tool combining the functionality of:**
 - a database
 - a document-sharing system
 - a hypermedia information space
 - a semantic network

} *semantic web-like system*
- **Features cross-linkage:** enables rapid access to interrelated information
- **An “organizational memory” system:** tracks history of project team’s fieldwork, labwork, & associated data collection activities

Network of Project Information

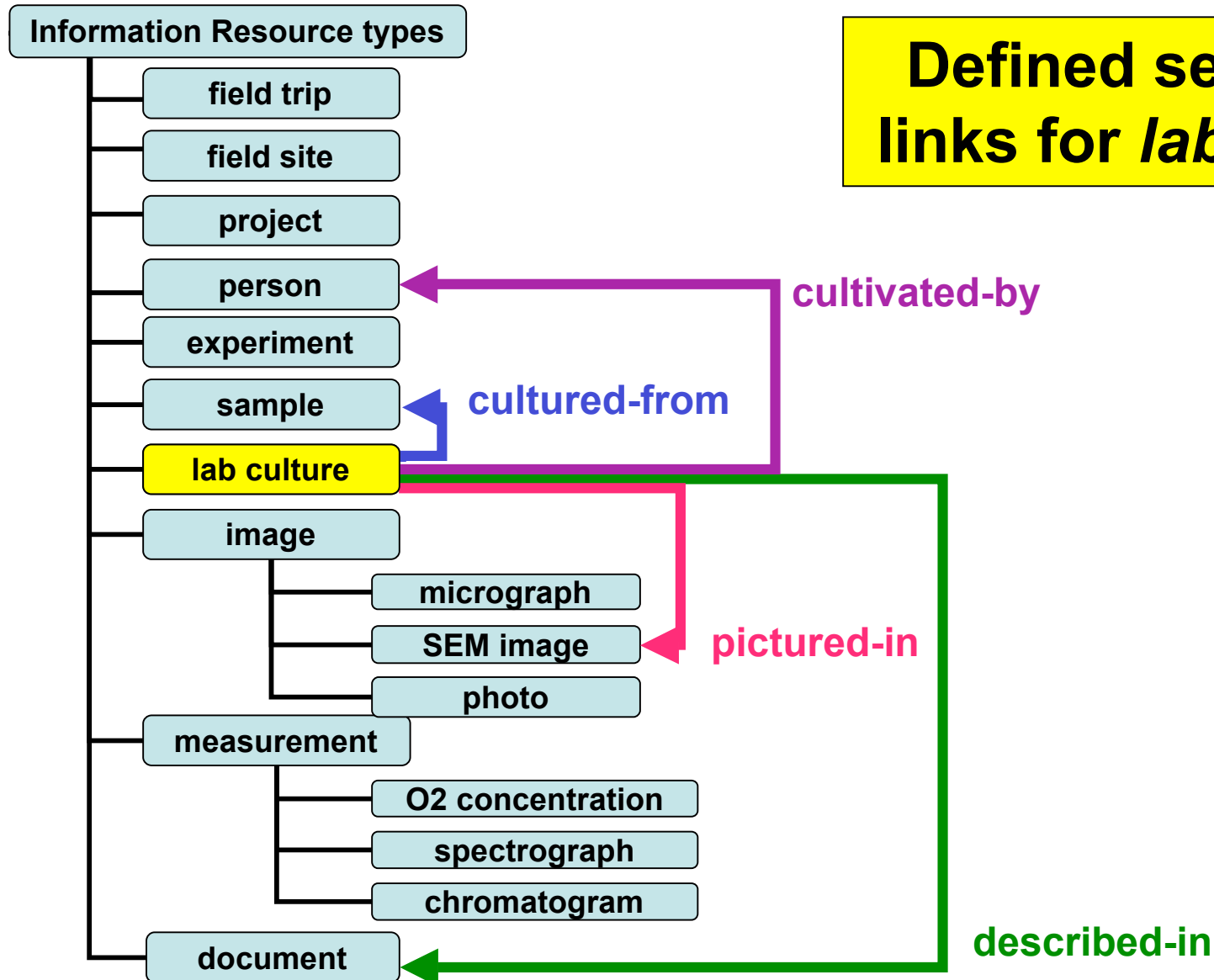


- **Nodes**: key project info resources or organizational structures (describe people, places, measurements, instruments)
- **Attributes**: properties of resources
 - **Links**: defined relationships among resources
- **Attached files**: electronic products associated with resources

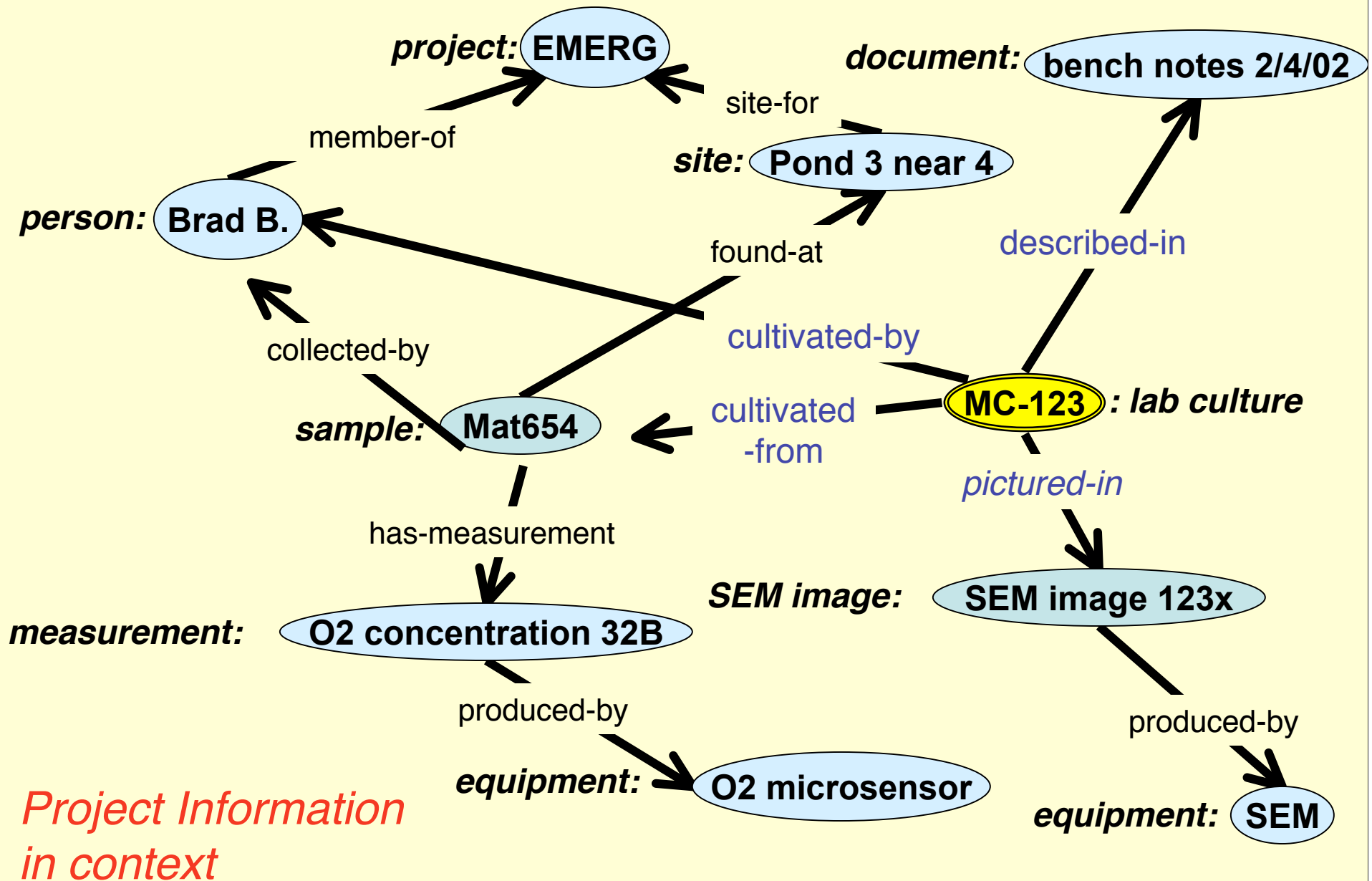
Ontology of Project Information Resource Nodes

Ontology defines allowable attributes & links for each node type

Defined semantic links for *lab culture*



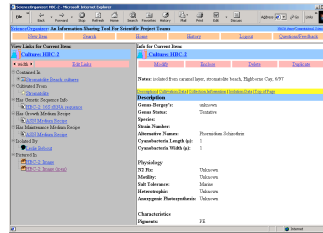
Evolving Semantic Web of Project Information



Organizer Components

Interface Layer

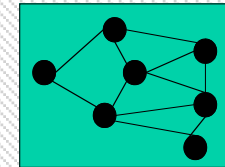
Node Browser Interface



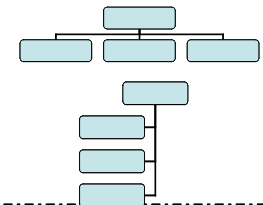
Programmatic/Agent Interface (NOIL)



Graphical Network Viewer



Structure Editors



Representation & Reasoning Layer

Email Ingestor
(email & attachments)

Semantic Network
(nodes, links, attribute values)

Information Ontology
(node types, link types, attributes, rules)

Inference Engine

Implementation Layer

Java
servlets

Apache-
Tomcat

MySQL
Database

JESS
(CLIPS)

file system

images
documents
datafiles

Organizer Applications

NASA Organizer

ScienceOrganizer

Early Microbial Ecosystems

JSC Astrobiology Institute

NIH Malaria Study

ARC Electron Microscopy Lab

InvestigationOrganizer

CRW Investigation

Airshow Investigation

CONTOUR Investigation

Columbia Investigation

Extension Features

ScienceOrganizer

- Real-time equipment control
- Automated experimentation

Both

- Collaborative image annotation
 - Microsoft Office macros
 - Email distribution

InvestigationOrganizer

- Fault tree viewer
- Event sequence editor